

Beta-gal
SEQUENCE LISTING

<110> Université de Liège

<120> Cold-active beta galactosidase, the process for its preparation and the use thereof

<130> Beta-gal

<140>

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<170> PatentIn Ver. 2.1

<210> 1

<211> 3171

<212> DNA

<213> Pseudoalteromonas haloplanktis

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Beta-gal

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Beta-gal

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Val Asp Glu Ser Leu Leu Tyr Glu Lys Ile Ser Lys Glu Leu Ser Gly
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Asp Trp Gln Ser Ile Thr Val Pro Ser Asn Trp Gln Leu His Gly Phe
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Asp Lys Pro Ile Tyr Cys Asn Val Lys Tyr Pro Phe Ala Val Asn Pro
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Pro Phe Val Pro Ser Asp Asn Pro Thr Gly Cys Tyr Arg Thr Glu Phe
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Thr Ile Thr Pro Glu Gln Leu Thr Gln Arg Asn His Ile Ile Phe Glu
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Gly Val Asn Ser Ala Phe His Leu Trp Cys Asn Gly Gln Trp Val Gly
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Tyr Ser Gln Asp Ser Arg Leu Pro Ser Glu Phe Asp Leu Ser Glu Leu
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Asp Gly Ser Tyr Leu Glu Asp Gln Asp Met Trp Trp Leu Ser Gly Ile
195 200 205

Phe Arg Asp Val Asn Leu Leu Thr Lys Pro Gln Ser Gln Ile Arg Asp
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Val Phe Ile Thr Pro Asp Leu Asp Ala Cys Tyr Arg Asp Ala Thr Leu
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His Ile Lys Thr Ala Ile Asn Ala Pro Asn Asn Tyr Gln Val Ala Val
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Gln Ile Phe Asp Gly Lys Thr Ser Leu Cys Glu Pro Lys Ile Gln Ser
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Thr Asn Asn Lys Arg Val Asp Glu Lys Gly Gly Trp Ser Asp Val Val
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Phe Gln Thr Ile Ala Ile Arg Ser Pro Lys Lys Trp Thr Ala Glu Thr
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Pro Tyr Leu Tyr Arg Cys Val Val Ser Leu Leu Asp Glu Gln Gly Asn
305 310 315 320

Thr Val Asp Val Glu Ala Tyr Asn Ile Gly Phe Arg Lys Val Glu Met
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Leu Asn Gly Gln Leu Cys Val Asn Gly Lys Pro Leu Leu Ile Arg Gly
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Val Asn Arg His Glu His His Pro Glu Asn Gly His Ala Val Ser Thr
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Ala Asp Met Ile Glu Asp Ile Lys Leu Met Lys Gln Asn Asn Phe Asn
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Ala Val Arg Thr Ala His Tyr Pro Asn His Pro Leu Phe Tyr Glu Leu
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Cys Asp Glu Leu Gly Leu Tyr Val Val Asp Glu Ala Asn Ile Glu Thr
405 410 415

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His Gly Met Phe Pro Met Gly Arg Leu Ala Ser Asp Pro Leu Trp Ala
420 425 430

Gly Ala Phe Met Ser Arg Tyr Thr Gln Met Val Glu Arg Asp Lys Asn
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His Ala Ser Ile Ile Ile Trp Ser Leu Gly Asn Glu Cys Gly His Gly
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Ala Asn His Asp Ala Met Tyr Gly Trp Ser Lys Ser Phe Asp Pro Ser
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Arg Pro Val Gln Tyr Glu Gly Gly Ala Asn Thr Thr Ala Thr Asp
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Ile Ile Cys Pro Met Tyr Ser Arg Val Asp Thr Asp Ile Lys Asp Asp
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Ala Val Pro Lys Tyr Ser Ile Lys Lys Trp Leu Ser Leu Pro Gly Glu
515 520 525

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Leu Gly Ser Phe Asp Asp Tyr Trp Gln Ala Phe Arg Glu Tyr Pro Arg
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Leu Gln Gly Gly Phe Ile Trp Asp Trp Val Asp Gln Gly Leu Ser Lys
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Ile Asp Glu Asn Gly Lys His Tyr Trp Ala Tyr Gly Gly Asp Phe Gly
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Asp Glu Leu Asn Asp Arg Gln Phe Cys Ile Asn Gly Leu Leu Phe Pro
595 600 605

Asp Arg Thr Pro His Pro Ser Leu Phe Glu Ala Lys Tyr Ser Gln Gln
610 615 620

His Leu Gln Phe Thr Leu Arg Glu Gln Asn Gln Asn Gln Asn Gln Asn
625 630 635 640

Gln Tyr Ser Ile Asp Val Phe Ser Asp Tyr Val Phe Arg His Thr Asp
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Asn Glu Lys Leu Val Trp Gln Leu Ile Gln Asn Gly Val Cys Val Glu
660 665 670

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Gln Gly Glu Met Ala Leu Asn Ile Ala Pro Gln Ser Thr His Thr Leu
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Thr Ile Lys Thr Lys Thr Ala Phe Glu His Gly Ala Gln Tyr Tyr Leu
690 695 700

Asn Leu Asp Val Ala Leu Ile Asn Asp Ser His Phe Ala Asn Ala Asn
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His Val Met Asp Ser Glu Gln Phe Lys Leu Ile Asn Ser Asn Asn Leu
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Asn Ser Lys Ser Phe Ala Ser Ala Thr Glu Lys Ser Val Ile Ser Val
740 745 750

Asn Glu Thr Asp Ser His Leu Ser Ile Glu Asn Asn Thr Phe Lys Leu
755 760 765

Val Phe Asn Gln Gln Ser Gly Leu Ile Glu Gln Trp Leu Gln Asp Asp
770 775 780

Thr Gln Val Ile Ser Ser Pro Leu Val Asp Asn Phe Tyr Arg Ala Pro
785 790 795 800

Leu Asp Asn Asp Ile Gly Val Ser Glu Val Asp Asn Leu Asp Pro Asn
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820 825 830

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Thr Cys Val Phe Asn Tyr Glu Phe Asn Gly Val Leu Gln Ala Gln Thr
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Gln Trp Leu Tyr Thr Leu Asn Asn Thr Gly Thr Ile Ser Leu Asn Val
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Asp Val Asn Leu Asn Asp Thr Leu Pro Pro Met Pro Arg Ile Gly Leu
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Leu Gly Pro Phe Glu Asn Tyr Pro Asp Arg Lys Ser Ala Ala Arg Phe
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Gln Asn Met Leu Thr Gln Ala Lys His Thr Asn Glu Leu Ile Ala Asp
980 985 990

Asp Cys Ile His Val His Ile Asp His Gln His Met Gly Val Gly Gly
995 1000 1005

Asp Asp Ser Trp Ser Pro Ser Thr His Lys Glu Tyr Leu Leu Glu Gln
1010 1015 1020

Lys Asn Tyr Asn Tyr Ser Leu Thr Leu Thr Gly Gly Ile Thr Thr
1025 1030 1035